

ABSTRACT OF THE DISCLOSURE

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A cache memory for a texture mapping process which is applicable to a high performance three-dimensional graphics card for a personal computer, three-dimensional game machines and other fields requiring small and high performance three-dimensional graphics. In particular, in order to accelerate a texture mapping process based upon a hardware-used mipmapping process using a trilinear interpolation in a three-dimensional graphics system, there is provided a cache memory in which only textures by a moderate size of a working set are stored, and all eight texels needed to perform a trilinear interpolation only in one clock cycle are accessed to obtain a final texel value, and a method enabling a reduction in penalty due to a cache miss by, with hardware-based prediction, prefetching textures to be needed in the future. The invention makes it possible that various sizes of texture images are effectively processed and texture mapping acceleration becomes possible even for small and low cost systems, as compared with a conventional hardware-based texture mapping acceleration method.